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ABSTRACT OF THE DISCLOSURE

An aberration changing optical system to be used with a projection optical system of a projection exposure apparatus, includes an optical element having at least one of a cylindrical surface and a toric surface and being rotatable about and tiltable to an optical axis of the optical system. In another form, the aberration changing optical system includes an optical element having different refracting powers in two orthogonal directions or having a refracting power only in one direction, the optical element being made rotatable about and tiltable to an optical axis of the optical system.

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